tion of the fibres and ganglion cells; in 2, old hemorrhages; in 5, atrophy of the ganglion cells and tracts; in 3, acute softening. The commonest location of hemorrhage was the floor of the 4th ventricle. Klien classifies the cases also according to the clinical symptoms, and calls attention to the fact that in all those cases in which death was apparently caused solely by Basedow's disease, definite alterations were found. He then concludes that we cannot regard these lesions as the cause of Basdow's disease, but merely as the result of the action of the poison which produces it. The changes in the cervical sympathetic ganglion are also probably secondary to the poison, but may be the cause of certain symptoms of the disease, and in this manner explain the benefit which occasionally follows the resection of the ganglia in this disease.

6. *Posterior Columns of the Cord.*—Goldstein would divide the posterior columns of the spinal cord largely according to the functions of the groups of fibres. He suggests therefore, the term "the spinal area of sensibility" for the upper and lower portions of the body. He then gives a series of diagrams which show how these areas are divided at different levels of the spinal cord, and believes that his method serves to overcome the lack of clearness in the designations hitherto employed, and enables us to understand more clearly the posterior columns. The figures are too complicated to be described in an abstract.

7. *Cerebral Abscess.*—A man of 33 developed severe pain in the left side of the head with vomiting and chills. This lasted about 2½ months. Later there was psychical disturbance, and still later paralysis of the right arm, tenderness over the left side of the head on percussion, and bilateral optic neuritis. There was no perforation of the ear-drum. At the autopsy otitis media was found, and an abscess of the left parietal lobe causing increase in the size of the hemisphere. The actual abscess cavity was small. It was limited rather closely to the white substance of the second temporal convolution, which explains the existence of a partial sensory aphasia. The paralysis was evidently due to involvement of the internal capsule. Examination of the wall of the abscess showed that it was composed almost exclusively of the connective tissue arising from the walls of the blood vessels, the glia not sharing in its formation. It contained numerous cells showing fatty degeneration. Kölpin is of the opinion that in an acute abscess formation there is rapid breaking down and solution of the tissues; that in chronic abscess formation the enlargement is due first to the secretion of pus from the membrane, second to the breaking down and new formation of the capsule. He then discusses the various forms of cells found in the tissue, particularly the plasma, the epithelioid, and the granular cells.

8. *Patellar Reflex Hysteria.*—Nonne again disclaims priority in noting the absence of the patellar reflex in hysteria.

J. Sailer (Philadelphia.)

Miscellany

A Case of Tumor of the Spinal Cord Removed by Operation. By Bernard J. Ward. (The British Medical Journal, Oct. 28, 1905.)

The patient was a male, 24 years old. Four months after a fall downstairs, in which he struck his back, he began having intermittent attacks of pain in the lumbar region, which were diagnosed as lumbago. These attacks continued for eight years, when, in August, 1903, there was noticed a slight weakness in his legs and a few weeks later a numbness, first in the groin, but afterward extending on down the leg. By October, 1903, he had a complete spastic paraplegia with a marked hypasthesia extending up to a line midway between the pubes and umbilicus and passing over the crest of the illicum formed the midline behind at about the third lumbar spine. There was a girdle sensation about the abdomen at this level. The Babinski sign was present. There was no incontinence of urine. At operation the spine and laminae of the ninth and tenth dorsal vertebrae were removed. The dura bulged out as a cyst, and on incising this a tumor about the size of a walnut could be felt beneath the posterior roots. It was easily shelled out and proved to be a filio sarcoma, which probably grew from the posterior roots. The next day after operation, the paralysis, instead of being spastic, was flaccid, and the anesthesia had become absolute up to the same level as before the operation. He was relieved of his pain, but at first had retention of urine and later incontinence. Death was due to extensive bed sores, twenty months after the operation, and at necropsy it was found that all that remained of the spinal cord at the site of pressure was a strip of fibrous tissue. The author discusses the diagnosis and operability of spinal cord tumors. C. D. Camp (Phila.).

Anatomy and Physiology of the Intracellular Conduction Paths.

Arturo Donaggio (Rivista sperimentale di Frenatria, XXXI. 1, June 1905, p. 45).

Special methods of staining reveal the presence of fibrils in the interior of the nerve cells of vertebrates. These fibrils occupy the entire cellular body, and not only the interstices of the chromatic substance. They extend into the processes, dendritic and axonal. These fibrils are not merely juxtaposed in braids, but form a veritable network, with true anastomoses (Donaggio, Cajal, Jaris). Besides this fibrillary network there exist in the cell long fibrils which traverse the cell out to the very periphery (A. Bethe). It cannot be affirmed positively, however, that these long fibrils anastomose among themselves. Donaggio thinks that they pass through the cellular element without losing their individuality.

The intracellular fibrillary network is condensed around the nucleus—the perinuclear pad. One can trace the continuity of the axis-cylinder prolongation from the periphery of the network to the perinuclear cap. The axis-cylinder is formed preeminently by the fibrillary elements of the intracellular network, even more than by the long fibrils.

This continuity among the cellular prolongations demonstrates clearly that the fibrils are the pathways of nervous conduction. Donaggio thinks that the intracellular fibrillary network to which gathers together all the processes, probably represents an apparatus for the reception and the synthesis of the sensations. The cell, the rendezvous, as it were, of an enormous quantity of anastomosing fibrils, ought to be looked upon as an element of the highest functional importance, and not, as Bethe looks upon it, as a mere passage way for the nerve currents, represented by an absence of intracellular fibrillary network and the presence only of long peripheral and undivided fibrils. Mettler (Chicago).

Contribution to the Study of the Structure of the Motor Plaques.

S. Ramony Cajal. T. iii. (viii. of the Quarterly Review. P. 97, 101, Madrid, 1904).

Cajal's experiments were made upon the ocular muscles of a rabbit a few days old, a pigeon and some very young birds (from four to six days after being hatched out). He employed the nitrate of silver method of staining, as it has heretofore given him such excellent results. He was led to draw the following conclusions:

1. That the staining procedure with reduced nitrate of silver may be employed in the study of the motor plates, provided one experiments with animals just born or very young.
2. That the varicosities of the terminals arborizations, as well as the extremities do not uphold the view of the development of independent fibres, but of a network with relatively large polygonal meshes.
3. That, as there exists only a terminal network (at least as an essential condition), the theory of Bethe and Nissl in regard to the functional and anatomical independence of the nerve fibres is untenable. Cajal maintains the same reserve in regard to the exclusive conducting power longitudmally of these fibres. Being given this reticular arrangement it can not be doubted but that the motor discharges scatter rather than follow the

fibres in their course; that is to say, take a path perpendicular to their general direction. METTLER (Chicago).

PNEUMOCOCCUS BRAIN AFFECTIONS. E. E. Southard and C. W. Keene. (Journal A. M. A., Jan. 6).

The authors publish reports of twelve cases of human brain infection with the pneumococcus, together with the results of inoculation of the pneumococcus in the brains of guinea-pigs. The material in both cases was used to determine the order and time relations of the acute inflammatory changes. The cases include rather various clinical and anatomic conditions which they find only partially explained with present evidence. A long series of cases with thorough bacteriologic studies will be required to settle questions raised by the various conditions. Clinically the cases reported include fulminant and wholly obscure cases, cases not to be distinguished from severe pneumonia, otitic cases, septicemic phenomena and cases clearly cerebral or meningitic in character. Anatomically reviewed, the pneumococcs produces in man a type of inflammation in which cellular exudation and fibrin formation are prominent. The postmortem conditions found vary from focal or diffuse red softening to purulent leptomeningitis and ependymitis and occasionally abscess formation. The meningeal exudate is almost constant on the convexity, the base is frequently involved and with it the ventricles and the cord. The histologic findings are still more various. In the meninges there is a cellular exudate with varying proportions of polynuclear leucocytes and mononuclear cells. Phagocytosis on the part of the latter for the former is most marked when the polynuclear cells are outnumbered. The cell proportions in the meninges are fairly constant in individual cases. Fibrin occurs about the veins and nerve tissue. The bascular changes are characteristic lifting of the arterial endothelium by cellular exudate, proliferative changes in the intima of the veins with infiltration by polynuclear leucocytes (characteristic in large sulcal veins), and in two cases there was mural thrombus formation in the veins. Seven cases out of the twelve showed increase or other changes in the neuroglia, especially of the subpial layer. The cortical tissue is almost invariably penetrated by polynuclear leucocytes. Orbital inoculations in guinea-pigs gave different results with different cultures. The usual but not constant tendency when positive results are obtained, is to the production of exudates with a high proportion of mononuclear cells of the phagocytic series. The exudation of polynuclear leucocytes, however, is primary and may be noted in six hours. The exudate is at its height in five or six days, and leaves no trace after from two to five weeks. Ependymitis and encephalitis are not prominent. As a rule, the guinea-pig inoculations produce no clinical sign. Other methods of inoculation were not so satisfactory for the study of the pneumococcus. The article is illustrated.